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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,630	07/15/2003	Yuanzhan Hu	12553/93	1715

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EXAMINER

LYONS, MICHAEL A

ART UNIT PAPER NUMBER

2877

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,630

Applicant(s)

HU ET AL.

Examiner

Michael A. Lyons

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 071503 and 092203.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

The use of a generic slider with a recessed portion or portions, however, would be functionally equivalent to the slider of Li, since the wedge slider is essentially a constant recessed portion with a changing slope and no change in the setup of the device is required to

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make an identical interference measurement using either the wedge slider or the generic slider with a recessed portion.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the method of Li to perform the calibration method with the calibration apparatus relying on a generic slider with a recessed portion instead of a wedge, the motivation being that the claimed method will generate the same results if the slider is a wedge or simply flat with recesses; the different slider is merely a non-essential change in the intended use of the method.

As for claims 2 and 19, comparing the expected (actual) distance to the optically observed distance based on the differential between the two is an inherent way to compare the values.

As for claims 3-4 and 20, claims 7 and 8 of Li discloses determining correction values along the length of the slider, the values representing surface irregularities, the values used to improve the accuracy of determining the expected distance, the mapping of the irregularities for this determination being done by a profilometer.

As for claims 5 and 21, Li discloses wedge slider 34.

As for claims 6 and 22, “the wedge slider 34 is fabricated through the use of well-known thin-film deposition techniques” (Col. 6, lines 37-38).

As for claims 8-9 and 24-25, “the calibration standard includes a wedge slider held in contact with a glass disc by a load bridge, load spring, and cover case” (abstract).

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As for claims 10-11 and 26-27, the inherent properties of the wedge disclosed in Figure 4 (the straight, angled slope) allow for the gap between the disc and the bottom of the slider to vary linearly as the location of the light impinging on the slider changes.

As for claims 12-13, 15, 28-29, and 31, “the expected flying height is compared to a flying height measured through optical interference techniques to calibrate the flying height tester” (abstract). These optical interference measurements are taken at multiple points along the device.

As for claim 14 and 30, although the use of explicit graphs and curves for visual comparison of the actual distance and the observed distances are not disclosed, and Official Notice is taken that it would have been obvious to one of ordinary skill in the art at the time the invention was made to do this, the motivation being that it is well known to plot curves of data for easy, visual information comparison.

As for claims 16-17, “the additive and subtractive nature of the reflected light along paths 76d and 76h creates a continuous spectrum containing segments of high intensity light as well as darker segments for the sensor” (Col. 5, lines 12-16).

Regarding claims 32 and 33, please see arguments above with regards to claims 1, 14, 18, and 30.

Claims 7 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (5,453,831, hereinafter “’831”) in view of Li (5,710,632, hereinafter “’632”).

As for claims 7 and 23, the ‘831 patent discloses the determination of the actual distance, but fails to disclose the use of an atomic force microscope for the distance measurement.

The '632 patent, however, discloses the use of an atomic force microscope in measuring distances for a surface height profile, also saying that "the profile can be created with a profilometer" (Col. 4, lines 32-33).

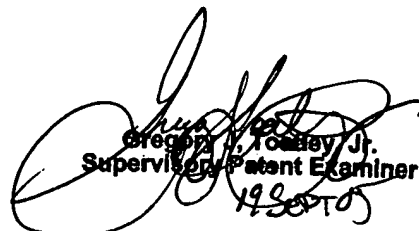
Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an atomic force microscope to determine the actual distance, the motivation being that the '831 patent shows the functional equivalence of using an atomic force microscope in place of the already discloses profilometer of the '632 patent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 571-272-2420. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAL
September 9, 2005


Gregory J. Toatley Jr.
Supervisor Patent Examiner
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